What is claimed is:

1   1. A communications network comprising:

2   a connection-oriented subnetwork;

3   a permanent topology of routers coupled to the subnetwork and

4 interconnected by virtual circuits, the routers further comprising:

5   means for calculating a shortcut path through the subnetwork;

6   a forwarding table comprising a first entry along a path through the

7 permanent topology and a second entry along the shortcut path; and

8   means for establishing a virtual circuit to another router along the

9 shortcut path;

1   2. The communication network of claim 1 wherein the virtual circuits

2 interconnecting the permanent topology of routers are permanent virtual circuits.

1   3. The communication network of claim 1 wherein the shortcut is an

2 intra-area shortcut.

1   4. The communication network of claim 1 wherein the shortcut is an

2 inter-area shortcut.

1   5. The communication network of claim 1 wherein the routers further

2 comprise means for receiving and processing link state packets containing connectivity

3 information broadcast by another router.

1   6. The communication network of claim 1 wherein the routers further

2   comprise means for receiving and processing link state packets containing shortcut

3   information broadcast by another router.

1   7. The communication network of claim 1 wherein the subnetwork is a

2   non-broadcast multiple access network.

1   8. The communication network of claim 1 wherein the subnetwork is an

2   ATM network.

1   9. A method of operating a router in a communication network coupled

2   to a connection-oriented subnetwork comprising the steps of:

3   receiving a link state packet;

4   using information in the link state packet to compute a permanent path to a

5   destination address;

6   using information in the link state packet to compute a shortcut path

7   through the connection-oriented subnetwork to the destination address; and

8   storing in a forwarding table

9   a first entry to a router along the permanent path and

10   a second entry to a router along the shortcut path through the

11   connection-oriented network.

1   10. The method of claim 9 wherein the shortcut path through the

2   connection-oriented network is to a router on the permanent path to the destination

3   address.

1   11. The method of claim 9 further comprising the step of setting up a

2   virtual circuit along the shortcut path through the connection-oriented network to the

3   destination address.

1   12. The method of claim 9 wherein the subnetwork is a non-broadcast

2   multiple access network.

1   13. The method of claim 9 wherein the subnetwork is an ATM network.

1   14. A method of operating a router in a communication network having a

2   plurality of interfaces to at least one connection-oriented subnetwork comprising the

3   steps of:

4   assigning a number to each of the interfaces;

5   grouping the interfaces into connectivity classes;

6   encoding information identifying the interfaces and the connectivity

7   classes into a link state packet; and

8   transmitting the link state packet to other routers in the communication

9   network.

1   15. The method of claim 14 wherein the link state packet is an OSPF link

2   state advertisement.

1   16. The method of claim 14 wherein the link state packet is in an opaque

2   format.

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1   17. The method of claim 14 wherein the subnetwork is a non-broadcast

2   multiple access network.

1   18. The method of claim 14 wherein the subnetwork is an ATM network.